STATUTORY DECLARATION

My name is Richard Bernabei, and I reside at 296 Palace Road, Kingston, Ontario, Canada. I am an employee of Queen's University at Kingston, where I have been teaching Classics (Ancient Greek, Latin, and related topics) since September, 1965. My current rank is Assistant Professor. Born and raised in Trenton, New Jersey, I am a citizen of the United States, and have the status of landed immigrant in Canada.

I wish to affirm that the information contained in this affidavit is, to the best of my knowledge and recollection, true and correct.

Early in 1967 I began extensive researches into the assassination of the late President John F. Kennedy. Since that time I have read the Report of the so-called Warren Commission and all of the twenty-six volumes of testimony and exhibits which purport to substantiate the conclusions of the Commission's Report. Moreover, I have read MANY OF THE COMMISSION'S UNPUBLISHED DOCUMENTS AND most of the important books and articles written by both critics and supporters of the Commission's assertion that Lee Harvey Oswald, alone and unassisted, was responsible for the assassination of the President in Dallas, Texas, on 22 November 1963.

I am especially interested in matters pertaining to firearms, ballistics, and wound ballistics (the effect of fast-moving projectiles striking flesh and bone). In this respect I regard myself not as an expert, for I lack the full and official qualifications of an expert, but as a well informed amateur.

My experience with firearms dates back to my childhood, when I learned the use of shotguns and rifles. It continued into my late teens and twenties, when I became familiar also with handguns, both revolvers and semiautomatic pistols, and into my middle age (I am now 43 years old), when-- except for the past two or three years-- I have continued my interest in the practice and theory of firearms.

Particularly since the development of my interest in the assassination of President Kennedy, I have read extensively on the theoretical aspects of the use of firearms and on the effect of fast-moving missiles on targets, both animate and inanimate.

I feel especially qualified to remark accurately on the sworn testimony of Robert A. Frazier who, as a Special Agent of the Federal Bureau of Investigation (FBI) and the FBI's expert on firearms identification and ballistics, in 1964 and again in 1969 testified regarding his own experience in connection with evidence adduced in the investigation of the assassination of President Kennedy.

During the years between 1968 and 1974, through personal correspondence and privately distributed memoranda to Harold Weisberg and others, I issued information and opinion regarding aspects of the assassination pertaining to firearms, ballistics, and wound ballistics. Insofar as I was able, I made such information accurated and complete.

Certain memoranda seem especially important, for they bear on Mr. Frazier's integrity and reliability as a witness, and on evidence in the assassination itself.

One memorandum, written in 1969, clearly reveals that Mr. Frazier failed to disclose vital information that he must have known both through his expert knowledge of ballistics and through his experience in test-firing the rifle, Commission Exhibit (CE) 139, that allegedly was used in the assassination. That information quite vitiates his own sworn testimony.

Referring to a defective sighting arrangement of the rifle, which was aimed through a telescopic sight, Mr. Frazier testified before the Commission (Commission's Hearings, vol. 3, p.411):

> ...the gun, when we first received it in the laboratory and fired these targets (CE's 548-550), shot high and slightly to the right.
>
> If you were shooting at a moving target from a high elevation, relatively high elevation, moving away from you, it would be necessary for you to shoot over that object in order for the bullet to strike your intended target, because the object during the flight of the bullet would move a certain distance.
>
> The fact that the crosshairs (of the telescopic sight) are set high would actually compensate for any lead (the point in front of the target where the missile and moving target would coincide) which had to be taken. So that if you aimed this weapon as it actually was received at the laboratory, it would be necessary to take no lead whatsoever in order to hit the intended object. The scope would accomplish the lead for you.

The Report of the Warren Commission (p. 194) quotes Mr. Frazier's testimony in support of the assertion, "Although all of the shots (in the test targets that came into evidence as CE's 548-550, fired at the FBI laboratory in Washington at ranges of 15 and 25 yards, and CE's 551-554, fired at the FBI range in Quantico, Virginia, at the range of 100 yards) were a few inches high and to the right of the target...the defect was one which would have assisted the assassin aiming at a target which was moving away."

Mr. Frazier's testimony is false in two respects: one is perhaps an oversight or a lapse in proper expression; the other can hardly be anything but deliberate deception.

Firstly, Mr. Frazier testified (Hearings, vol. 3, p. 411) that the mount which clamps the scope to the rifle was loosely attached when he first received the rifle:

> ... the mount was loose on the rifle when we received it.

Such an arrangement is an insurmountable detriment to accurate shooting.

Secondly, and far more important respecting the question of Mr. Frazier's integrity, after he tightened the screws and first test-fired the rifle in Washington, it was clear that bullets fired from the rifle were cast into an unusually high trajectory, much higher than normal, for at 15 and 25 yards the test bullets struck 4 to 5 inches above the point of aim. (See Mr. Frazier's testimony at Hearings, vol.3, p.404) and CE's 548-550). An upward trajectory of such magnitude would bring bullets some 29 inches or more above the point of aim at 100 yards, the distance at which Mr. Frazier first fired the rifle at long range in Quantico.

In the course of his testimony, Mr. Frazier introduced into evidence CE's 551-554, targets fired at 100 yards in Quantico. These show bullet holes grouped about 5 inches above the point of aim. CE's 551-554 are not, however, the first targets that Mr. Frazier fired at the 100 yard range. Before firing these, Mr. Frazier fired other targets which he did not place into evidence. The first of the targets that he fired at 100 yards undoubtedly would show the precise point of impact at that distance, about 29 inches or more above the point of aim, for after

Mr. Frazier fired his first 100-yard target he tried unsuccessfully to adjust the sight to a point where bullets would strike where the rifle was aimed. He managed to adjust the sight sufficiently to cause the bullets to strike about 5 inches above the point of aim. (Hearings, vol.3, pp. 504 ff.)

The accompanying diagram (marked "Item A") [~~ill~~] illustrates the trajectory of bullets when Mr. Frazier first test-fired the rifle at 15 yards and at 100 yards

Under conditions similar to those that are supposed to have prevailed when the President was wounded in the head by gunfire, the computed point of impact for bullets fired downward is 25 inches above the point of aim at 90 yards, the approximate distance between the President and the easternmost window on the sixth floor of the Texas School Book Depository, the place in Dallas from where the Warren Commission asserts all the shots originated. Such a trajectory utterly belies the conclusion that "the defect was one which would have assisted the assassin." In fact, quite the opposite is true. And Mr. Frazier must have known so.

Another memorandum, written in 1970, deals with a bullet that was fired from the rifle, CE 139. This memorandum leads to the conclusion that CE 399, a bullet found on a stretcher at Parkland Hospital in Dallas not long after the shooting, played no part whatever in the wounding either of President Kennedy or of then Governor John B. Connally. EE 399 is the basis of the Commission' so-called Single Bullet Theory, wherein CE 399 is alleged to have struck both men and to have caused all of their wounds, except those inflicted on the head of President Kennedy.

The memorandum asserts that CE 399 lost none of its substance in the form of fragments.

The significance of this memorandum, if it is substantiated by proper inquiry and proper examination of CE 399, is that the Commission is wrong in its conclusion that the bullet struck the President and the Governor, for X-rays disclose that numerous metallic fragments, some perhaps as large as the head of a match, were lodged in the bodies of both victims at places where the Commission supposed the bullet passed.

A copy of this memorandum (marked "Item B") accompanies this affidavit. It is an accurate copy of the original version, except that I have made a few deletions, a few additions, and have incorporated some marginal notes as reminders for possible revision.

A third memorandum, written in 1972, sets forth reasons for concluding that in addition to being struck in the head by a bullet fired from behind him, a bullet that traversed his skull and perhaps emerged relatively intact, the President was wounded in the head also by a bullet fired from in front of him, a bullet that fragmented very severely on impact with the right-front part of his head and left numerous dustlike fragments embedded in his brain.

A copy of this memorandum (marked "Item C") accompanies this affidavit.

In connection with this memorandum on the dustlike fragments, I wish to offer an opinion regarding the wounding.

A head wound such as the President suffered-- with gross disruption of flesh and bone near the surface at the very point of impact on the right-front part of his head, and shallow penetration of minute bullet fragments-- is the normal result of woundings caused by so-called varminting bullets. These are relatively small, frangible bullets fired at exceedingly high velocities. (The 5.6 mm. round used by U.S. forces in Vietnam is analogous to this type of bullet, except that the military bullet is full-metal-cased, surrounded by a copper jacket, rather than soft-nosed, with lead exposed at the tip of the bullet, or hollow-pointed.)

I believe that a varminting bullet struck the President in the right-front part of his head, and that it was fired from a point in front of him.

Varminting bullets are designed specifically to produce extensive fragmentation on impact, massive wounding at the point of impact, and quick killing of animals usually regarded as pests, animals such as woodchucks, foxes, coyotes, and the like. Their effect is devastating. (For example, a few years ago I examined a wolf that had bees shot in the shoulder bone at fairly close range--about 50 yards-- by a light-weight, high-velocity varminting bullet. The wound was localized at the point of impact, for it fragmented into numerous tiny particles that did not penetrate deeply. The hole in its pelt was larger than my fist, and the underlying flesh and bone were grossly mutilated.)

If I may render any assistance to the Court, kindly inform me how I may do so.

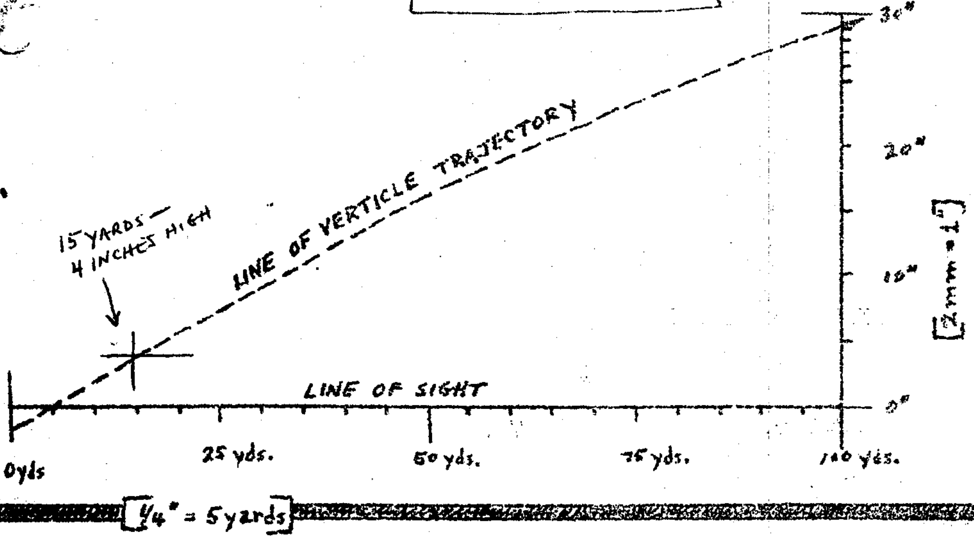
DECLARED BEFORE ME at the City of Kingston, in the County of Frontenac, and Province of Ontario, this 5th day of October, 1976.	))))))))))	Richard Bernabei Richard Bernabei 296 Palace Road Kingston, Ontario Canada

....

A Notary Public, in and for the Province
of Ontario.

EXHIBITS 1 AND 2 : DEFECTIVE SIGHTING ARRANGEMENT WHEN FRAZIER FIRST FIRED CE 139 AT 15 YARDS AND WHEN HE FIRST FIRED CE 139 AT 100 YARDS

EXHIBIT 1



Location of scope: 1½" above rifle bore.

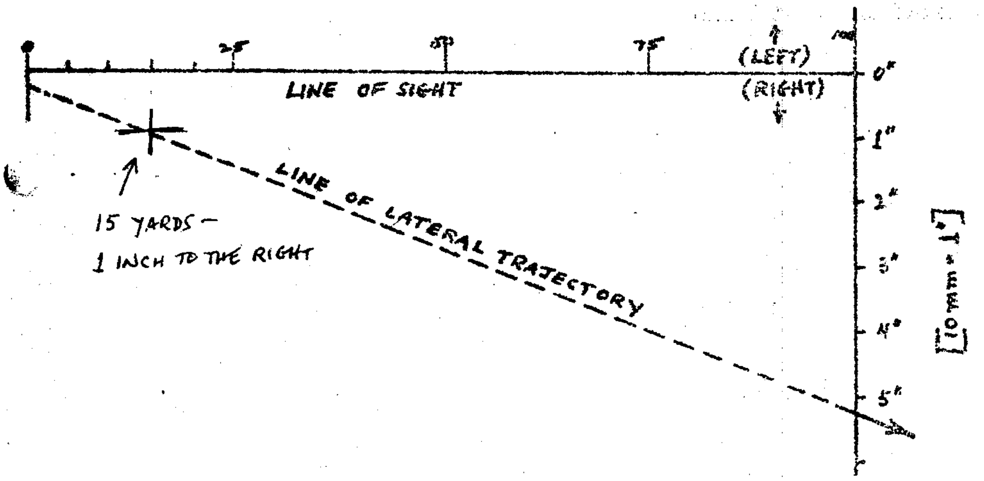
Point of impact,

a) at 15 yards: 4" above the point of aim;

b) at 100 yards: 29" above the point of aim.

(determined by computation and by test-firing)

EXHIBIT 2



Location of scope: ¼" left of rifle bore.

Point of impact,

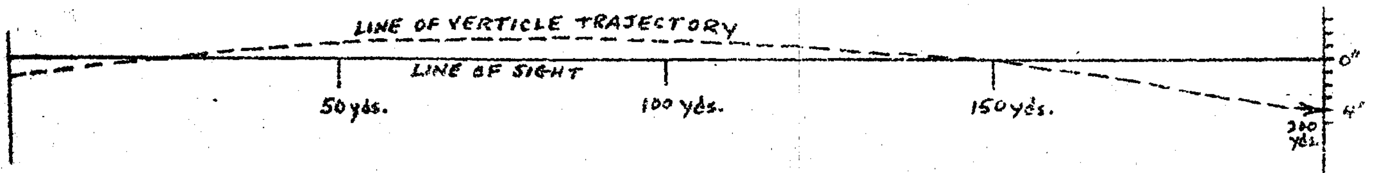
a) at 15 yards: 1" right of the point of aim;

b) at 100 yards: 5¼" right of the point of aim.

(determined by computation only)

EXHIBIT 3 : PROPER SIGHTING ARRANGEMENT

EXHIBIT 3



Relevant Ballistic Data

Caliber: 6.5 x 53 mm Mannlicher-Schoenauer (SAME BALLISTIC PROPERTIES AS 6.5 mm. MAN.-CARCAN

Weight : 160 grains (SAME AS 6.5mm. Man.-Carcano)

Muzzle Velocity ; 2160 feet per second (same ")

Trajectory for rifle sighted-in at 150 yards (normal for this caliber): bullet crosses the line of sight at 25.5 yards, passes 1.5" above the line of sight at 75 yards, crosses the line of sight again at 160 yards, passes 4" below the line of sight at 200 yards.

ITEM B

Memorandum: JFK assassination   January 1970

Topic... The alleged fragmentation of bullet CE 399

To...... Harold Weisberg
Gary Schoener
Howard Roffman

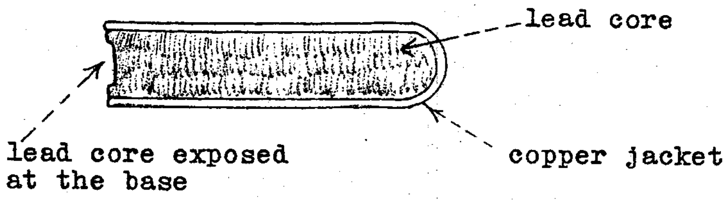
From.... Dick Bernabei → [Summary of Conclusions on p.9]

....

This memorandum deals with the question whether bullet CE 399 lost any of its substance in the form of fragments from any place on its surface. The evidence bearing on the question proves that CE 399 lost no fragments.*

The construction of CE 399

CE 399 belongs to a class of bullets which technically are referred to as full metal cased (FMC). Like other FMC bullets, CE 399 is composed of a lead alloy core that is encased all around its surface by a copper jacket, except at the base, the trailing end, where the lead core is exposed. The following diagram illustrates the pristine construction of bullets like CE 399.



The copper jacket

Expert testimony regarding the condition of CE 399 precludes the possibility that the bullet lost any fragments from any place on its copper surface.

FBI firearms identification expert Robert A. Frazier examined CE 399 and reported on the condition of its jacket. Frazier testified that the copper surface of the bullet was completely intact when he first received it on the evening of the assassination. He stated that the copper jacket bore the imprint of the lands and grooves of the rifled barrel through which the bullet had been fired, and that the bullet was slightly squashed longitudinally near the base, but that the copper surface was not otherwise disturbed.

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* Readers who are not familiar with the way in which CE 399 is alleged to have figured in the assassination of President Kennedy should now read the Appendix that is attached at the end of this memorandum.

Removal of fragments for spectrographic analysis

The present condition of CE 399 differs from its condition when Frazier first examined it. In order to determine the metallic composition of the bullet by spectrographic analysis, Frazier manually removed substance from two portions of the bullet: in 1964, before the Warren Commission, Frazier testified that he scraped a small amount of metal from the copper jacket at the nose of the bullet, its forward ~~leading~~ end; and in 1969, at the trial of Clay Shaw in New Orleans, Frazier testified that he also removed a small amount of metal from the lead base of the bullet.

⁁ forward

|| why did he not report this to the Commission?

Exhibit 1 (attached) shows CE 399 with the defect that resulted when metal was removed from the bullet's nose. The defect resulting from the removal of a portion of lead from the base is discussed below (p.8).

The base of CE 399

The testimony of firearms identification expert Frazier concerning the condition of CE 399 establishes beyond doubt that until Frazier removed substance from the nose of the bullet, CE 399 lost no fragments whatever from any place on its copper surface. Physical characteristics of the base of CE 399 indicate [redacted] that until Frazier removed a small amount of lead from the base, CE 399 lost no fragments from any place on its base.

⁁ indicate

Frazier did not testify regarding the condition of the base of CE 399. The analysis that follows depends on observation of two photographs which depict the base of CE 399.

[CE 399 – weight 158.6 grains] → Frazier uses the present tense when referring to the weight of 399 – "The bullet weighs..."
Does this imply that 158.6 gr. was the weight of 399 after Frazier removed substance for spectro?

See Frazier's WC testimony (reference?) that 399 may have lost no fragments at all. (incorporate info in this memo?)

Average weight of unfired 6.5 M-C bullets: 160-161 grains
(what are the weights of Frazier's four test bullets after firing?)

Recipients of the
[illegible] have the
photographs
themselves

Photographs of the base of CE 399

Exhibit 2 (attached) is a Xerox copy depicting two separate photographs that show the base of CE 399. This exhibit and others like it are intended only to illustrate the location of various topographical features that occur on the surface of the base. Details discussed in this memorandum refer to the photographs themselves which are in the possession of those who receive this memorandum.

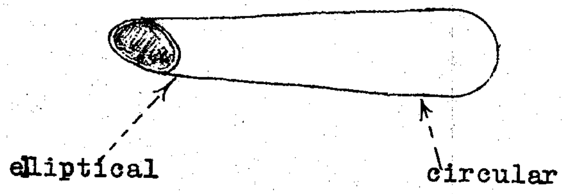
The photograph designated "photo-W" was made at the National Archives for Harold Weisberg in 1967; the photograph designated "photo-R" was made at the National Archives for Howard Roffman in 1968. Photo-R was taken at a considerably greater distance from the bullet than photo-W, and therefore fails to resolve minute details of the base as clearly as photo-W.

The deformity of CE 399 near the base

When a bullet leaves the rifle barrel from which it is fired, the circumference of the bullet retains the circular shape of the rifle bore until the bullet strikes some substance that may cause it to become deformed.

The generally elliptical shape of CE 399 at and near its base indicates that in the course of its trajectory it came into contact with a substance of sufficient density to squash the rear portion of the bullet longitudinally. The circumference of CE 399 is circular near the nose; the elliptical deformity is apparent about half way down the bullet's length and becomes progressively more pronounced as it approaches the base. The following diagram illustrates the elliptical deformity of CE 399:

sketch is deliberately exaggerated



The cause of this deformity cannot definitely be ascertained, but the most likely explanation of the deformity is that, inhibited by the substance which it penetrated, the velocity and spin of the bullet were reduced sufficiently to cause the bullet to be unstable and to tilt. Proceeding along its trajectory in this tilted posture, one side of the bullet pressed heavily against the resistent substance and thereby became squashed.

Since there are no marks on the surface of the bullet which indicate that it struck anything else, it is reasonable to conjecture that the bullet came to rest in the same substance that caused its deformity.

Two possibilities may [[redacted]] be eliminated from consideration of the cause of the eliptical deformity: CE 399 did not brush forcibly against any hard surface in the course of its flight; and it was not fired into cotton batting.

maybe not so. (see below) ?

When a bullet brushes forcibly against a hard substance, a substance that does not readily yield to pressure, the hard substance disrupts the regular pattern of lands and grooves that are imprinted on the copper sides of the bullet. The imprinted lands and grooves on the surface of CE 399 are thoroughly regular and undisturbed.

also: no marks of imprinting by clothing

Cotton batting possesses certain special adherent qualities which inhibit the deformation of bullets that are fired into it. When a bullet spins rapidly into cotton batting, tiny fibers adhere to the bullet and begin to spin with it as it proceeds along its trajectory. Additional fibers accumulate progressively around the fibers which adhere directly to the bullet, and thereby form a tight, protective ball of cotton that does not allow the bullet to be ~~[illegible]~~ greatly deformed. Bullets recovered from cotton batting retain virtually the form that they had when they struck the cotton.

? maybe not so. See Frazier's test bullets, fired into cotton and squashed similarly to CE 399. Same squashing along longitudinal axis at the base. Also lead flowing from the base of the copper jacket.

The explanation of what happens to a bullet when it is fired into cotton batting does not preclude the possibility that CE 399 was fired into some other fiberous substance than cotton.

Use of cotton preserves the microscopic features of the lands and grooves.

When a bullet strikes woven material, the nose of the bullet is imprinted by the material with a mesh-like pattern

Nomenclature and location of topographical features of the base

The following arbitrarily selected terms apply respectively to various topographical features that are evident in the two photographs which show the lead core at the base of CE 399. The locations of these features are designated in Exhibit 3:

jacket (copper)
rim
rim indentation
valley
crater
lumps A, B, and C
hollow (area surrounded by other structures)

Factors leading to the conclusion that the base of CE 399 lost no fragments

It is evident that in the course of being squashed the surface of the lead core at the base of CE 399 suffered some disruption, especially in the area where lumps and cracks appear. Heavy pressure on the impacting bullet caused some of its core to flow back slightly out of the jacket; when the bullet was squashed at the base, the protruding lead became slightly cracked and mangled.

This happened also with the test bullets That Frazier fired into cotton. See Roffman's slides of the bases of the test bullets. Same sort of disruption as CE399 – squashing and some lead protruding from the base.

NOTE
↓
This happened with Frazier's test bullets

Notwithsatnding its deformity, the surface of the lead core at the base of CE 399 displays no characteristics which indicate that any fragments were lost from this region of the bullet. On the contrary, two factors offer [redacted] indications that no fragments were lost: (a) the absence of flat, striated surfaces; and (b) the presence of what appear to be fine grains of gunpowder.

(a)Absence of striated surfaces: Striae, microscopically small scratches in the form of parallel lines, occur when two solid objects rub against one another and the harder of the two surfaces imprints elongated marks on the softer. Because lead is an extremely soft metal, almost any solid surface that rubs forciby against it will imprint the surface of the lead with these tiny parallel scratches. The absence of striae on the base of CE 399 precludes the possibility that the base of the bullet brushed forcibly against any hard object with a rough surface.

Moreover, since the raised structures on the surface of the base are rounded, it is not possible that that the bullet brushed forcibly against any exceedingly smooth object that might not scratch a lead surface. Such an object would flatten the tops of small lead structures; on surfaces of microscopically small dimensions, smoothness implies flatness.

it → E.g. brushed against bone which is not striated.

~~This meant something when I wrote it. Why not now. Get a reference.~~ I see. Rephrase

The only flat, unstriated surface on the base of CE 399 occurs on the "rim" in an area less than one millimeter in length. The location of this tiny "plateau" is indicated in Exhibit 4 (attached). Physical characteristics of the "plateau" indicate that its flatness resulted from mild pressure being applied at that point by some hard, relatively smooth surface. ~~[illegible]~~

(b) Presence of "powder": Fine grains of gunpowder often become embedded ~~at~~ in the lead base of bullets when they are fired. The intense heat and enormous pressure resulting from the combustion of gunpowder softens lead at the base of bullets during the course of firing.* While such bullets are being propelled through the barrel of a gun, many remnants of burned gunpowder may adhere to the softened lead and become embedded there.

* This may be the most important part of this memo, for it is subject to verification by physical testing — spectro or neutron activation.

The frequency with which gunpowder occurs in the base of a bullet depends greatly on the composition of the lead alloy. If the alloy is relatively hard and is not readily subject to softening by the heat and pressure of combusting gunpowder, few if any flecks of gunpowder may become embedded there. If, however, the alloy does soften under such heat and pressure, many flecks of gunpowder may adhere to the surface at the base.

also the intensity of heat created by burning gunpowder, and the ability of the gunpowder to burn off completely

Photo-W, the clearer of the two photographs in Exhibit 2, discloses the presence of a grainy substance (henceforth referred to as "powder") all over the lead base of CE 399, except on "lumps A and B" and in places where lead was disturbed in ways unconnected with the actual shooting of the bullet. (These exceptions are discussed below.) In the "valley" the flecks of "powder" look like tiny grains of sand on the "valley" floor. On "lump C", around the "rim", and in the "hollow" the grainy substance appears as tiny dots of reflected light.

Very unlikely

The "powder" on the lead base of CE 399 may be gunpowder, dust, or a combination of both. The precise nature of the "powder" cannot be positively ascertained by the use of a single photograph, for apparent differences between various flecks of "powder", especially those that appear as points of light, may result not from inherent differences in the flecks themselves, but merely from differences in the ways they reflect the light that strikes them.

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* U.S. Army Medical Service, Wound Ballistics (Office of the Surgeon General, Department of the Army; Washington, D.C.; 1964), p. 125: "Considerable heat is developed by the friction of the bullet in passing through the gun bore, and the temperature of the powder gasses is high (above that of molten steel)."

Since many of the flecks of "powder" are irregular in shape and appear to be embedded in the lead, not merely resting on its surface, it is my firm opinion that most of the "powder" on the lead surface of the base is gunpowder. Some of the white dots, especially those that look like tiny white eggs resting on the lead surface, seem to be flecks of dust, but they are few in relation to the number of irregularly shaped flecks that appear to be embedded in the lead.

If the "powder" that occurs on the base of CE 399 is gunpowder, it is impossible that lead was detached from any surface where the "powder" appears. The removal of lead by any means implies the removal also of gunpowder adhering to the lead.

important! ←‖ A further reason for believing that the "powder" consists mostly of gunpowder is that no irregularly shaped flecks occur on the copper jacket. Copper lacks the adhesive properties of softened lead and does not readily retain gunpowder that strikes its surface in the course of firing.

Absence of "powder" from "lumps A and B"

On most of their surface "lumps A and B" lack flecks of "powder" such as those that occur on other parts of the base. Since their roundness and the absence of striae on the surface of these "lumps" preclude the possibility that any fragments were detached from this area, it must be supposed that the flecks of "powder" were detached by attrition during normal processes of handling the bullet. Such attrition might result from the base being rubbed by a soft cloth, or even from the bullet moving inside a padded container. [illegible]

its

The "rim indentation"

The indentation on the "rim" of the base results not from the detachment of substance by fragmentation, but from the displacement of substance by pressure. Between the time when the bullet was fired and the time when its base was photographed, the bullet bumped gently

I have done this with bullets, some of them similar to CE399

against some hard object that caused the "rim indentation". Such an indentation can easily be reproduced by lightly tapping a lead surface with the back edge of a knife or with some similar object.

Sharpness at the edges of the "rim indentation", and the fact that its edges overlap the jacket and the surrounding lead indicate that the indentation occurred after the bullet was fired. The heat and pressure of burning gunpowder soften lead at a bullet's base and dull the sharp edges of tiny lead structures.

The crater: removal of lead for spectrographic analysis

Characteristics of the conical "crater" and of a small surface adjacent to it on "lump B" indicate that it is from these places that FBI agent Frazier removed substance from the base for spectrographic analysis. Evidently Frazier used the tip of a sharply pointed knife with which to cut away a small portion of lead from the base. Conical craters similar to the one that occurs on the base of CE 399 can easily be reproduced by such means. Moreover, a pointed knife of a certain degree of sharpness regularly reproduces not only the conical "crater", but also minute lumps of lead at the bottom of such craters, lumps similar to ~~those~~ the one that occurs at the bottom of the "crater" on the base of CE 399.

I reproduced this crater almost exactly with [illegible] a knife that I use for filleting fish. Similar lead, similar crater, similar lumps—many times.

The reason for believing that a part of "lump B" was removed by a knife edge is that the surface in question is [illegible] striated. A knife edge causes striations on lead that the knife cuts.

The precise areas affected by the edge of a knife are indicated in Exhibit 4.

"Flake of lead" accidentally detached

In personal correspondence with Harold Weisberg, an official of the National Archives ~~recently~~ reported that a small "flake of lead" was accidentally detached from the base of CE 399 on a date prior to the time when the base of the bullet was first photographed.

Concerning the question from what area of the base that "flake of lead" originated, the foregoing analysis eliminates all possibilities except that the "flake" was detached from some area associated with the "crater", for that is the only area of the bullet where any substance is missing.

The sharpness of the knife, or the character of the knife point, have something to do with whether the lump appears at the bottom of the crater. Sharper and more pointed knife tends to produce lumps more often.

Summary of conclusions

There is no area on the surface of bullet CE 399 from which any fragments are missing, except those areas where copper and lead were manually detached after the bullet came into the possession of official investigative authorities.

FBI firearms identification expert Frazier examined CE 399 microscopically and testified that when he first received the bullet no fragments had been detached from its copper jacket.

~~Certain~~ Features of the lead portion exposed at the base of CE 399 [redacted] establish that when Frazier first received the bullet no fragments had been detached from its base: although the base is squashed, mangled, and slightly cracked, no flat and striated areas occur on its surface; and a photograph of the base discloses the presence of what appear to be fine grains of gunpowder embedded in the surface of the base.

Relevance to the wounding of President Kennedy and Governor Connally

The foregoing analysis establishes [redacted] that CE 399 lost no metallic substance in the form of fragments. That conclusion refutes the [redacted] assertion of the Warren Commission that CE 399 wounded Pres. Kennedy and Gov. Connally. The numerous metallic fragments that were deposited in the bodies of the two victims of gunfire must have originated from a source other than CE 399.

....

Attachments

Attached to this memorandum are an Appendix and four Exhibits.

Appendix

Summary of the Warren Commission's conclusions regarding the role of bullet CE 399 in the wounding of President Kennedy and Governor Connally

……

When the shooting occurred, President Kennedy was sitting on the right rear seat of an open convertible limousine. Governor Connally was seated on the jump seat of the same limousine, directly in front of the President. The *Report* of the Warren Commission asserts that bullet CE 399 wounded both men in the course of its trajectory.

Alleged trajectory of CE 399

According to the *Report*, CE 399 struck Kennedy low in the back of the neck, traversed his body without striking bone, and emerged from the front of his neck; continuing its flight, CE 399 then seriously wounded Connally in three separate parts of his body.

The *Report* concludes that, after exiting the body of the President, CE 399 passed through the torso of Connally where the bullet struck with sufficient force to shatter a part of the fifth rib on the right side and thereby to cause fragments of that rib to become secondary missiles; after exiting Connally's chest, the bullet penetrated and fractured Connally's right wrist, exited the wrist, and finally came to rest in Connally's left thigh.

The *Report* further asserts that the bullet gradually worked itself out of Connally's thigh and fell unnoticed on the hospital stretcher on which Connally was transported to an operating room. The bullet was found on a stretcher in the hospital a few hours after the injured persons arrived there.

but not the stretcher that held Connally.

Metallic fragments in the bodies of Connally and Kennedy

According to records published by the Warren Commission in 1964, metallic fragments were deposited in all the parts of Connally's body that were struck by gunfire: in the right side of Connally's torso a metallic fragment was deposited on the fifth rib; several metallic fragments were deposited in Connally's right wrist; and a metallic fragment was embedded in Connally's thigh.

at least eight

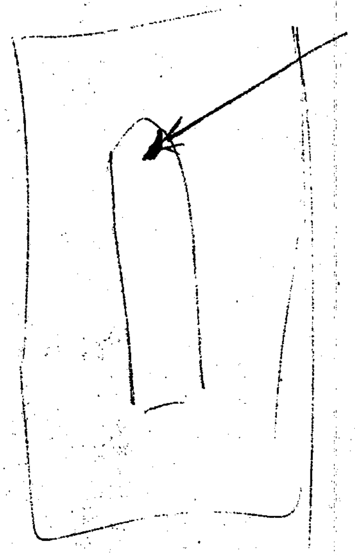
In 1969 it was officially disclosed that several small metallic fragments in the area of Kennedy's neck are visible in X-rays that were made during the autopsy of the President's body.

End of Appendix

Exhibit 1

(to be inserted)

show CE399 with portion removed from nose from Thompson ~~Six Secon~~ → *Six Seconds*...



portion of copper jacket removed from this location for spectro

EXHIBIT 2

(MILLIMETER SCALE REFERS ONLY TO PHOTO W)

EXHIBIT 3

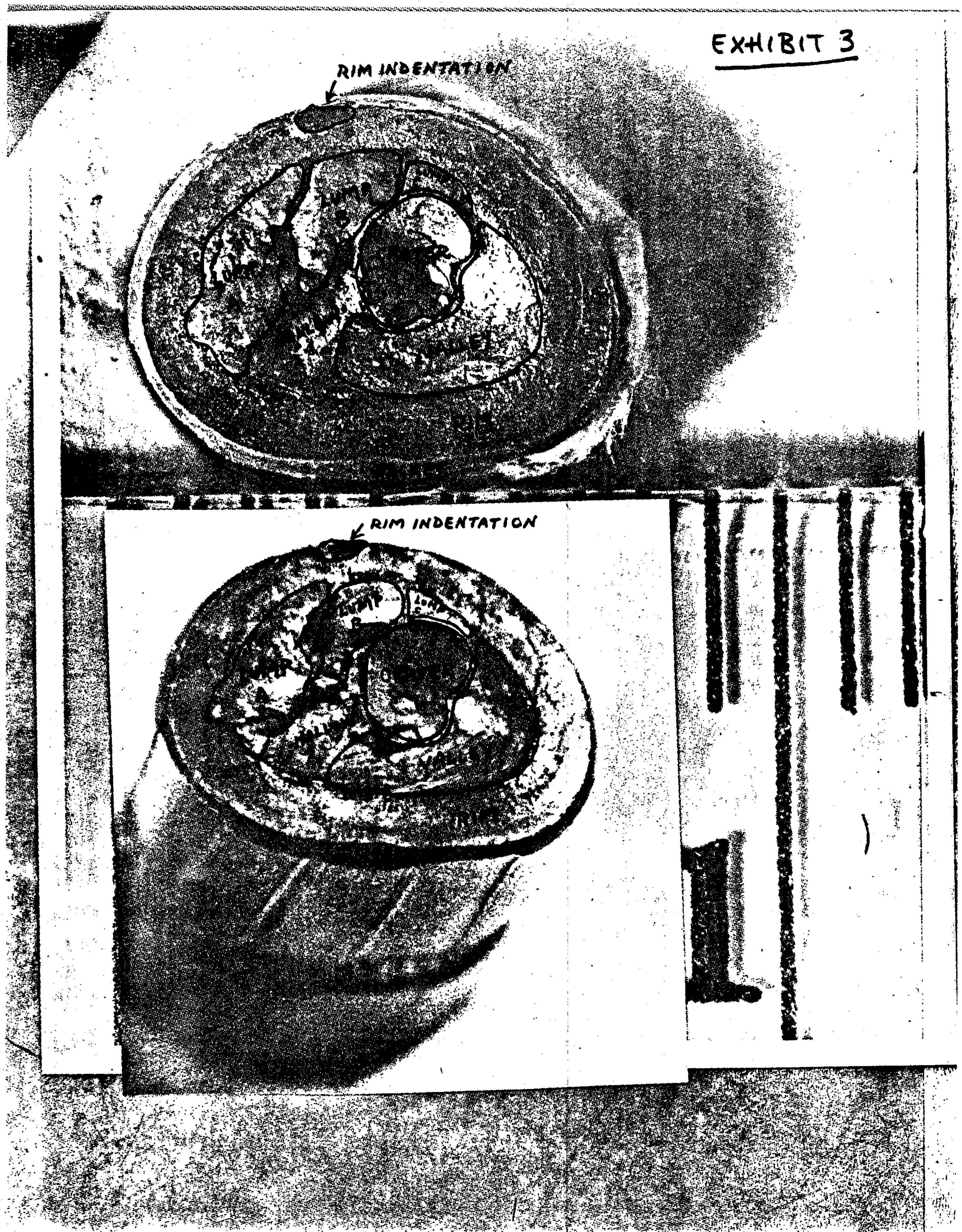
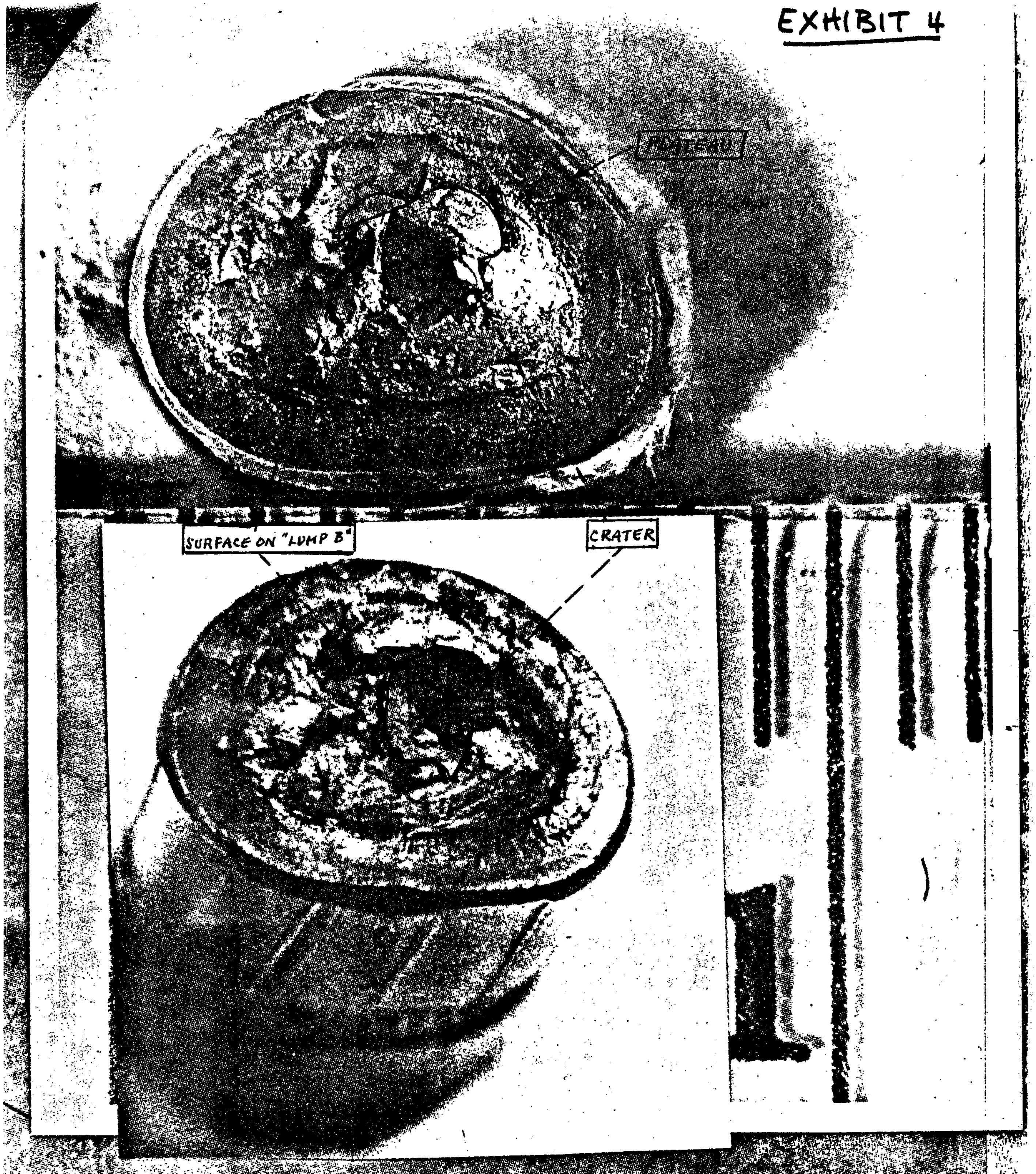

RIM INDENTATION
LUMP B
VALLEY
RIM INDENTATION
LUMP B
LUMP C
VALLEY

EXHIBIT 4



U

ITEM C

Transcript of page 1 of the memorandum, "The Distribution of Dustlike Bullet Fragments, etc."

(The original version seems too dim on page 1 for proper representation by photocopying)

Of the wounds that the late President John F. Kennedy suffered when he was assinated, the most severe were those inflicted on his head. The Warren Commission, which was assigned the responsibility of investigating the assassination, asserted that the President was injured in the head by a single bullet that struck from behind. Ballistic evidence pertaining to the head wounding does not dispute that assertion; such evidence does, however, provide convincing reasons for believing that the President was wounded additionally by a bullet fired from the front, a bullet that fragmented very severely on impact with the upper right-front part of the President's head.

As a result of the shooting, the President's brain was lacerated throughout the right side; he suffered wounds of the scalp and skull in the rear of the head and in the upper right side of the head. The most conspicuous (continued on page 2)

THIS IS EXHIBIT "C" TO
THE AFFIDAVIT OF
RICHARD BERNABEI
SWORN BEFORE ME THIS 5th DAY
OF October, A.D., 1976
A COMMISSIONER, ETC.

ORN BEF DAY

MASTER COPY

[illegible] COPY

(with ERRATA)

p.5
p.7
add footnote to p.12 re demonstration photos & x-rays
p.17
deletion f. p.13 ff.?
p.14

THE DISTRIBUTION OF BULLET AND BONE FRAGMENTS IN [illegible] KENNEDY'S [illegible] AND EVIDENCE OF A [illegible] FIRED FROM THE [illegible]

by

Richard Bernabei

1972

Of the wounds that the late President John F. Kennedy suffered when he was assassinated, the most ~~deadly~~ severe were those inflicted on his head. The Warren Commission, which was assigned the responsibility of investigating the assassination, ~~concluded~~ assented that the President was injured in the head by a single bullet that struck from behind ~~[illegible]~~. Ballistic ~~[illegible]~~ evidence pertaining to the head wounding does not dispute that ~~conclusion~~ assertion; such evidence does, however, provide convincing ~~[illegible]~~ reasons for believing that the President was wounded additionally by a bullet fired from the front, a bullet that fragmented very severely on impact with the upper right-front part of ~~the~~ the President's head.

As a result of the shooting, the President's brain was lacerated throughout the right side; he suffered wounds of the scalp and skull at the rear of the head and in the upper right side of the head [illegible] wound occurred in [illegible] the region above ~~of~~ the right temple, where ~~gunfire~~ [illegible] created a massive cavity in the skull (the cavity was some five inches in diameter) and grossly mutilated the underlying brain tissue. A small hole in the back of the head displayed characteristics normally associated with a wound of bullet entry.

The gunfire that fatally injured the President produced numerous minute bullet fragments that became embedded in the right side of the brain. The Report of the Warren Commission asserts that all of these fragments evolved from a bullet that entered at the back of the President's head. This bullet, according to the Commission, partly disintegrated while passing through the brain, where it deposited the fragments, and emerged from the right side of the head.

Notwithstanding indications [illegible] that a bullet passed into the rear of the President's head and emerged from the right side, other indications establish ~~the ballistic evidence indicates~~ that the minute fragments embedded in the brain were formed from a bullet that was fired from the front of the President and fragmented on impact near the President's right temple. *

X-ray films taken several hours after the shooting revealed the presence of about forty fragments of metal in the right side of the President's brain. These

* See footnotes at the end of this monograph

fragments were irregular in shape and exceedingly small in size, ~~--~~ most of them less than one millimeter in maximum dimension. In testimony before the Warren Commission, Dr. James J. Humes, ~~the hospital pathologist~~ who was assigned to supervise the performance of an autopsy on the body of the late President, characterized the fragments as "extremely small, less than 1 mm. in size for the most part...dustlike...small, dust, of the size of dust particles."* Indeed, Dr. Humes ~~asserted~~ disclosed that the dustlike fragments were actually somewhat smaller than they appeared on X-ray films, since, as he explained, "the X-ray pictures that were made would have a tendency to magnify these minute fragments somewhat in size."** Other descriptions in the records of the Warren Commission similarly ~~disclose~~ reveal that the metallic fragments in the brain were numerous and extremely small. ***

Regarding the question where in the brain the minute fragments were situated, the records of the Warren Commission ~~are~~ seem ambiguous and incomplete. They reveal that the fragments appeared only in the right side of the brain, but do not suggest that there was an obvious concentration of fragments in the front or rear of the brain. Rather, they cause the reader to reckon, incorrectly, that the fragments were distributed evenly in a "line" or "path" throughout the right side, front and rear. For example, the official autopsy report, which Dr. Humes wrote, ~~was written by Dr. Humes,~~ states that the fragments appeared "along a line corresponding with a line" extending between the small hole in the back of the head and an area just above the right eye.* Similarly, an FBI report written by two agents who viewed the X-ray films during the autopsy says that "the path of disintegrated fragments could be observed along the right side."** Ambiguity arises in the use of such expressions as "along a line corresponding with a line" and "the path...along the right side." The Warren Report compounds the ambiguity by referring to the minute fragments as "running in a line."***

An elaborate description of the fragments, written a few years after the Warren Commission became defunct~~, and corroborated by yet another detailed description,~~ discloses that the "line" or "path" was imaginary for all but 1 3/4 inches of its entire length. The incompleteness of statements in the Commission's records is evidenced ~~made evident~~ by the same elaborate description, which reveals that the fragments were not spread throughout the right side of the brain, but were concentrated in the front of the brain on the right side.

~~(Currently, the most complete and~~ This unambiguous and seemingly complete account of the minute fragments is contained in a report prepared early in 1968 by three forensic pathologists and a radiologist. Responding to public criticism that the official autopsy report and other medical records improperly represented the nature of the President's wounds, the government secretly commissioned the four medical experts as a panel to examine (among other things) X-ray films of the President's head, and to report on the contents of those films. Kept secret for nearly a year, their report was unexpectedly released early in 1969.*

The new description corresponds with what is known about the fragments from the records of the Warren Commission, but it adds that the fragments were situated mostly in the front of the brain on the upper right side:

> Distributed through the right cerebral hemisphere are numerous small, irregular metallic fragments, most of which are less than 1 mm. in maximum dimension. The majority of these fragments lie anteriorly and superiorly.**

More than that, the panel doctors provide the information that the fragments were not distributed evenly through the area where they penetrated. They specify that the fragments formed two groups which were distinct from one another both in size and in distribution. One group was composed of "relatively large" fragments spread randomly in the front of the brain and somewhat toward the rear. The other group consisted of discernibly smaller fragments concentrated in a compact formation only in the region of the right temple. On one X-ray film this distinct formation of "finely divided" fragments appeared elongated in shape, with its long axis oriented in the direction of the hole in the back of the head. The panel's report states:

> The metallic fragments visualized in the right cerebral hemisphere fall into two groups. One group consists of relatively large fragments, more or less randomly distributed. The second group consists of finely divided fragments, distributed in a postero-anterior direction in a region 45 mm. long and 8 mm. wide. As seen in lateral film #2 this formation overlies the position of the coronal suture; its long axis if extended posteriorly passes through the above-mentioned hole (in the rear of the skull).* It appears to end anteriorly immediately below (i.e., under the surface of) the badly fragmented frontal and parietal bones just anterior to the region of the coronal suture.**

→ verified by one of the Panel doctors — through mail.

NOTE { INCORPORATE LATTIMER'S SKETCH SHOWING DISTRIBUTION OF THE FRAGMENTS.

(insert between pp. 6 and 7)

NOTE { Include also Dr. Wecht's description of the fragments and his sketch.

[~~The accuracy of the panel's description is confirmed by~~]

Dr. John K. Lattimer, a urologist who was allowed to examine the X-ray films early in 1972, confirms the accuracy of the panel's description. In an article appearing in Resident and Staff Physician Dr. Lattimer describes the fragments verbally in terms corresponding with those of the panel, and in addition presents a lateral diagram of a skull showing approximately the location of the "relatively large" and "finely divided" fragments.* Dr. Lattimer's diagram is notable especially in disclosing that no minute fragments at all were located far back in the brain in the area where ~~obviously~~ apparently a bullet had passed through the back of the President's skull. The "relatively large" fragments nearest to the hole in the back of the skull appear to be about two or three inches away from the hole, and there are no "finely divided" fragments in that area. A The significance of that information and of the information corroborating the panel's description is that many of the minute fragments embedded in the President's brain, ~~perhaps~~ probably all of them, were formed from a bullet that struck the President in the front of the head, not in the rear.

copy this

~~Dr. Lattimer describes the disposition of the fragments by saying: Sandlike fragments... were scattered throughout the right side of the upper and forward parts of the brain case.**~~

(insert in Footnotes, p.16)

p.7...* John K. Lattimer, M.D., Sc.D., "Observations Based on A Review of the Autopsy Photographs, X-rays, and Related Materials of the Late President John F. Kennedy," Resident and Staff Physician (May, 1972), pp. 43, 56; cf. p.46, a diagram showing the skull as viewed from the front. On p.63 of ~~this~~ his article Dr. Lattimer describes the disposition of the fragments by saying: "Sandlike fragments... were scattered throughout the right side of the upper and forward parts of the brain case."

~~p.7...~~ ** ~~ibid.~~, p.63.

(Wisdom from Lattimer)

Physical principles governing the penetration of projectiles dictate that minute fragments of a bullet should come to rest very near the place where they are formed-- that is, the place where the bullet breaks apart. Although collectively they generate enormous pressure in and around the area where they penetrate and cause great damage there, minute projectiles individually possess very little energy, and they expend it almost instantly. The result is that such projectiles penetrate for very short distances. The concentration ~~presence~~ of numerous dustlike fragments of metal ~~concentrated~~ in the upper right-front part of the President's brain, and ~~[illegible]~~ their complete absence from the area far back in the brain, indicate that President Kennedy was wounded by a bullet that fragmented on impact with the ~~upper~~ right-front part of his head.

Moreover, referring to different sized fragments that are formed from one bullet, the same physical principles dictate that the smaller fragments should come to rest nearer to the area where they are formed than the larger fragments, and that they should spread less diffusely than the larger fragments. Of the two groups of fragments in President Kennedy's brain, the "finely divided" fragments all came to rest compactly in the front, whereas the "relatively large" fragments were spread both in the front and, to some extent, in the rear. This arrangement of fragments strengthens the conclusion that they were formed from a bullet that struck and fragmented in the [illegible] right-front part of the President's head.

Several factors determine the ability of projectiles to penetrate tissue, but in this discussion the preeminently relevant factor is the size of the fragments in question. Other factors-- for example, the density of the substance being penetrated, the composition of the fragments, and their velocity as parts of the whole bullet-- were essentially the same for all of the fragments, so that they do not account for differences in the disposition of the "relatively large" and of the "finely divided" fragments. But in size and in features such as weight and area, which are directly related to size, the individual fragments differed discernibly, and the differences were prominent enough to cause obvious differences in their depths of penetration.

Physical principles affecting the penetration of projectiles are explained succinctly in the National Rifle Association's NRA Firearms and Ammunition Fact Book. This explanation refers specifically to the penetrating ability of spherical shotgun pellets of different sizes, but it applies generally to any projectiles which differ essentially only in size (and correspondingly in weight and area):

> The only force carrying a projectile through its target arises from its own velocity and weight. Assuming like velocities, then the only factors making for different penetrations by non-deforming round shot will be weight and area. The weights of spheres of the same material will be to each other as the cubes of their diameters. With the available force varying as the diameter cubed, and the resistance varying only as the diameter squared, it is obvious that the penetration will be as D^3 divided by D^2, which equals D itself. That is, penetration goes up strictly in accordance with the diameter of the shot.*

In other words, with other factors being equal (as they were in the wounding of President Kennedy), the larger the projectiles, the more deeply they penetrate; conversely, the smaller the projectiles, the less deeply they penetrate.

With very small projectiles there is very slight penetration. This is especially true if the projectiles, in addition to being small in size and light in weight, are irregular in shape. Although their shape does not apply in considering why the "relatively large" fragments penetrated the President's brain differently from the "finely divided" fragments (for all of the fragments are described as irregular), shape was a prominent factor affecting penetration by the minute fragments as a whole. The U.S. Army Medical Service's book, Wound Ballistics, characterizes irregular shape as a factor that greatly reduces the ability of projectiles to penetrate substances; it asserts:

> Random fragments frequently have a shape conducive to excessive retardation... For minimal retardation, surfaces should be smooth.*

Thus, fragments of irregular shape, such as those embedded in the President's brain, are subject to excessively retarding forces; they do not have the ability to penetrate as far as correspondingly small spherical projectiles.

Mr. Shelley Braverman, a firearms consultant, explained why it is that very minute fragments, described as "dustlike" in size, should not penetrate very deeply:

Ballistics further verify that, with projectiles differing only in size and in features related to size, the smaller projectiles penetrate less deeply than the larger.*

dele?

Yet another factor bearing on the penetration of projectiles ~~should~~ may be considered in reference to the disposition of the minute metallic fragments in the President's brain.

When numerous minute fragments are formed from a frangible bullet, ~~the~~ fragments not deflected by hard objects spread in all directions forward of the place where the bullet breaks apart. Many such fragments diverge sharply from their original trajectory-- that is, their trajectory when they were parts of the whole bullet. The very process whereby projectiles are caused to diverge from an original trajectory entails some loss of energy in the projectiles. Therefore, with other things being equal, projectiles which diverge from their original trajectory would penetrate less deeply than similar projectiles which maintain their original trajectory.

conservation of energy
&
conservation of momentum

reference?

This factor, the loss of energy in projectiles through divergence from their original trajectory, explains why minute fragments formed from a bullet that struck at the right side of President Kennedy's head did not penetrate into the left side of his brain. The divergent fragments would be expected to penetrate less deeply than similar non-divergent fragments. A frangible bullet fired from a location forward of the President and striking him tangentially in the right-front part of the head would be expected to produce fragments penetrating somewhat deeply toward the rear, with shallow penetration of fragments that were diverted elsewhere than toward the rear. This seems to be precisely the case in the disposition of the "relatively large" fragments, which spread diffusely from the area where they were formed. Those that maintained their original trajectory penetrated relatively far toward the rear of the brain; those that diverged penetrated for relatively short distances. A similar pattern appears on a small scale in the elongated formation of "finely divided" fragments. In relation to one another, these, too, seem to have penetrated relatively far in the direction of their original trajectory, with little or no penetration to the sides.

Referring only to the concentration of the numerous dustlike fragments in the front part of the President's brain, ~~(not to mention several other features of the shooting which corroborate this finding)~~, the proof of a shot fired from the front seems positive, not subject

p. 6 ... * All parentheses are my additions.

** "1968 Panel Review, etc.," p. 11. The diagrams in Appendix B depict approximately the areas where the two groups of minute fragments were located in the President's head. ~~The diagrams are conjectural and do not constitute the basis for any~~ an~~alysis.~~ ~~Conclusion~~s ~~pertain only to written description~~s.

accuracy verified by one of the Panel doctors.

[illegible]

p.7
ee visual
ctw pp. 6&7)

p. 9 ... * NRA Firearms and Ammunition Fact Book, published by the National Rifle Association of America, Washington, D.C., p. 193. A thorough discussion of the physical forces affecting penetration of projectiles is presented in the U.S. Army Medical Service's book, Wound Ballistics (U.S. Government Printing Office; Washington, D.C.; 1962), pp. 115-235.

p. 10... * Wound Ballistics, p. 123. See also Figure 142 on p. 232.

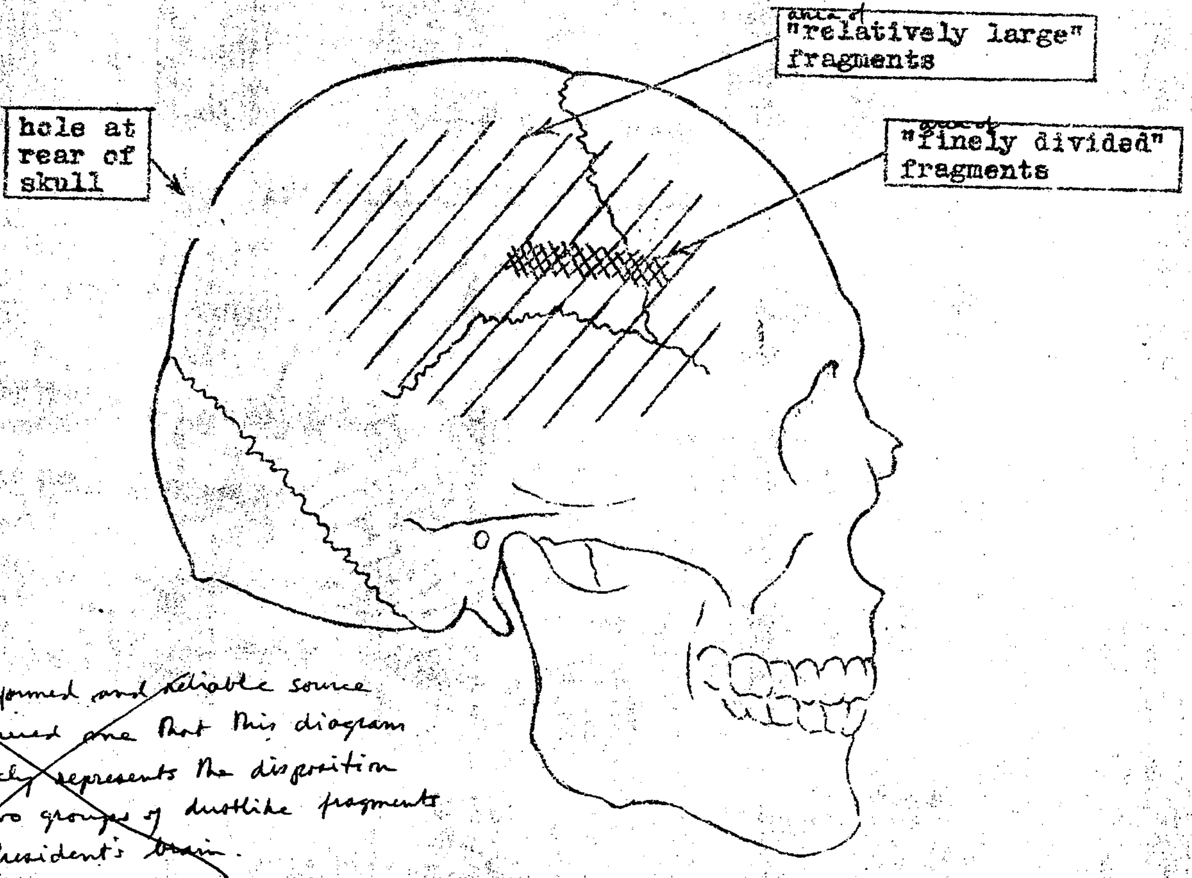
p. 11... * Personal correspondence from Mr. Shelley Braverman.

Appendix B: Three ~~conjectural~~ diagrams illustrating approximately the location of multiple minute fragments of metal in the head of President Kennedy

Note: Diagram "a", representing the right side of a skull, is developed from information based on the examination of two X-ray films depicting the President's head as viewed from the left side at slightly different angles from one another. The panel doctors examined only these two left-lateral films and one film depicting the head as viewed from the front ("1968 Panel Review, etc.," p. 5).

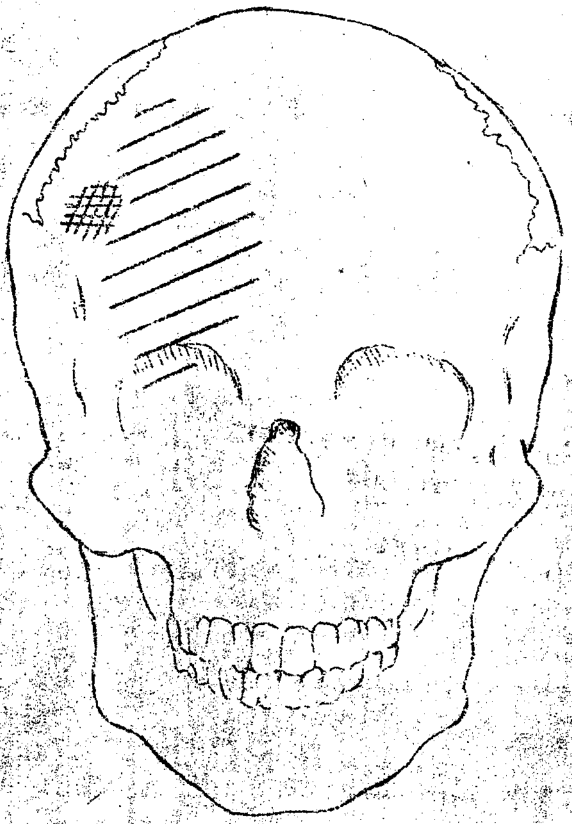
In diagram "c" I neglect to indicate the formation of "finely divided" fragments, but rather show the approximate location of the mass of fragments taken as a whole. The panel's description of the orientation of the "finely divided" fragments in the direction of the hole in the back of the head refers only to their appearance in left-lateral X-ray # 2. A view from above might show, for example, that the group of "finely divided" fragments was oriented to the left or right of the hole, that it was wider or narrower than its appearance in the lateral X-ray, or other things. Therefore, rather than set forth what cannot be known even approximately, I elect to delete reference to the "finely divided" fragments in diagram "c".

(a) Skull viewed from the right side



~~Notice:~~
~~An informed and reliable source has assured me that this diagram accurately represents the disposition of the two groups of dustlike fragments in the President's brain.~~
~~RB~~

(b) Skull viewed from the front



(c) Skull viewed from above